REMARKS

This is a full and timely response to the non-final Official Action mailed **June 13, 2008** (the "Office Action" or "Action"). Reconsideration of the application in light of the above amendments and the following remarks is respectfully requested.

Claim Status:

By the foregoing amendment, claim 16 has been amended. Claims 12 and 23 were previously cancelled without prejudice or disclaimer. Thus, claims 1-11, 13-22 and 24-27 are currently pending for further action.

Allowable Subject Matter

In the recent Office Action, the Examiner indicated the presence of allowable subject matter in claims 4-8, 18 and 19 (Action, p. 11). Applicant wishes to thank the Examiner for this finding of allowable subject matter.

The recent Office Action also contains a statement of reasons for the allowability of claims 4-8, 18 and 19 (Action, p. 11). Applicant agrees with the Examiner's conclusions regarding patentability, without necessarily agreeing with or acquiescing in the Examiner's reasoning. In particular, Applicant believes that the application is allowable because the prior art fails to teach, anticipate or render obvious the invention as claimed, independent of how the claims or claimed subject matter may be paraphrased.

Prior Art:

With respect to the prior art, claims 1-3, 16-17 and 20-21 were rejected under 35 U.S.C. § 103(a) as obvious in light of the combined teachings of U.S. Patent No. 5,289,476 to

Johnson et al. ("Johnson") and U.S. Patent No. 7,120,333 to Gibson et al. ("Gibson"). For at least the following reasons, this rejection is respectfully traversed.

Claim 1 recites:

> A method for improving burst acquisition in a digital communication device comprising:
> receiving a signal; and
> performing a sync word search on said signal;
> wherein said sync word search includes *performing a hybrid synchronization technique, said hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process.*

(Emphasis added).

In contrast, Johnson teaches a system in which "at a fixed position in the preamble of every packet…the transmitter of transceiver 51 sends a fixed code (i.e. a transmission mode) indicating to the receiver whether the remainder of the packet will be decoded as BPSK or QPSK data" such that "[a]fter decoding the transmission mode in the preamble, the receiver switches to BPSK or QPSK mode accordingly." (Johnson, col. 8, lines 29-41). Johnson further teaches that the transceiver "always begins transmitting each packet in the BPSK mode," and that carrier synchronization, bit synchronization, and the transmission of the "fixed code" that indicates the modulation scheme of data payload of the packet are all transmitted in this initial BPSK mode. (*Id.*). Thus, as all of the packets transmitted by Johnson's system are synchronized in BPSK mode prior to any switch in a decoding modulation scheme, Johnson *cannot* teach or suggest the claimed step of "performing a hybrid synchronization technique, said hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process" recited in claim 1.

Gibson teaches a "method for frame sync detection using signal combining and correlation" wherein pseudonoise (PN) coded signals are despread "to provide in-phase I_1-I_n, and quadrature phase Q_1-Q_n signals, wherein each I_1-I_n and each Q_1-Q_n signal contains at least one sync bit, and where $n \geq 2$." (Gibson, col. 2, lines 11-28). The sync bits "from each of the I_1-I_n and each Q_1-Q_n signals are summed" and compared "with the at least one reference bit" in a "reference sync" such that "the results of each … comparison are accumulated so as to form two accumulates I_A and Q_A" which are "squared to form a sum" that is then "compared with a predetermined threshold" to determine "whether frame sync has been achieved." (*Id.)*.

The recent Office Action asserts that Gibson's process of determining frame sync in a spread-spectrum signal teaches "a hybrid synchronization technique" similar to that recited by claim 1. (Action, p. 3). This assertion is incorrect. It appears that the Examiner has confused the in-phase and quadrature phase signal *components* (I and Q) of a modulated signal (e.g. a QPSK signal) with *separate and distinct signals* of a lower-order modulation and a higher-order modulation, respectively. However, this is clearly not the case. (*See e.g.* "IQ Modulation," at http://education.tm.agilent.com/index.cgi?CONTENT_ID=4 and "Decision Feedback Equalisation of Coded I-Q QPSK in Mobile Radio Environments" at http://ieeexplore.ieee.org/iel4/2220/16199/00749189.pdf). During PSK modulation, a signal is typically separated into I and Q components. By examining the I and Q components of a single signal *together* at any given point in time, the phase changes (and therefore the modulated data) of that signal can be determined for a given instant in time. (*Id. See also* "Phase-Shift Keying," http://en.wikipedia.org/wiki/Phase-shift_keying). However, the I and Q components are not individually modulated data signals in and of themselves, as they must *both* be used together to recover data from a QPSK data signal. Moreover, even if the I and Q

components of a signal were to be considered as individually modulated signals, neither of the I and Q components is of a higher modulation order than the other. (*Id.).*

The information given above with respect to the I and Q components of a modulated signal is rudimentary to the field of signal modulation, and it will be readily apparent to anyone having ordinary skill in the art that Gibson does not teach or suggest anything more than demodulating simultaneous signals (spread-spectrum) that employ a common modulation scheme. Nowhere does Gibson teach or suggest the step of "performing a hybrid synchronization technique, said hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process." (claim 1).

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Johnson and Gibson, did not include the claimed subject matter, particularly a "hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process."

The differences between the cited prior art and the claimed subject matter are significant because the claimed hybrid synchronization technique "combines the best performance characteristics of both a lower order demodulation … and a higher order demodulation…to simultaneously achieve both excellent falsing and miss rate performance." (Applicant's original specification, paragraph 0015). Thus, the claimed subject matter provides feature and advantages not known or available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 1 under 35 U.S.C. § 103 and *Graham*.

For at least these reasons, the rejection based on Johnson and Gibson of claim 1 and its corresponding dependent claims should be reconsidered and withdrawn.

Claim 16 recites:

> A digital communications system comprising:
> a tuner; and
> a demodulator;
> wherein said demodulator is configured to receive a signal and *perform a hybrid synchronization technique on said signal, said hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process.*

(Emphasis added.)

In contrast, the combination of Johnson and Gibson fails to teach or suggest the subject matter of claim 16. Particularly, as has been amply demonstrated above, neither Johnson nor Gibson teach or suggest the claimed demodulator configured to "perform a hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process." (claim 16).

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Johnson and Gibson, did not include the claimed subject matter, particularly a "hybrid synchronization technique including both a lower order modulation detection and correlation process, and a higher order modulation detection and correlation process

The differences between the cited prior art and the claimed subject matter are significant because the claimed hybrid synchronization technique "combines the best

performance characteristics of both a lower order demodulation … and a higher order demodulation…to simultaneously achieve both excellent falsing and miss rate performance." (Applicant's original specification, paragraph 0015). Thus, the claimed subject matter provides feature and advantages not known or available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 16 under 35 U.S.C. § 103 and *Graham*. For at least these reasons, the rejection based on Johnson and Gibson of claim 16 and its corresponding dependent claims should be reconsidered and withdrawn.

Claims 11, 13-15, 22 and 24-27 were rejected under 35 U.S.C. § 103(a) as obvious in light of the combined teachings of U.S. Patent No. 5,289,476 to Rostany et al. ("Rostany") and Johnson. For at least the following reasons, this rejection is respectfully traversed.

Claim 11 recites:

> A method for improving burst detection in a digital receiver device, comprising:
> receiving a signal; and
> performing a multi-step burst detection process on said signal;
> wherein the multi-step detection process further comprises:
> measuring a signal energy;
> comparing said signal energy to a designated signal energy threshold value;
> *measuring a signal carrier to noise plus interference ratio (CIR);*
> *comparing said CIR measurement to a designated CIR threshold value*; *and*
> *signaling a valid burst detection if said signal energy exceeds said designated signal energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time.*

(Emphasis added.)

In contrast, Johnson teaches a "power line communication apparatus…wherein transmission mode information is encoded into each data packet while maintaining immunity from single bit errors." (Johnson, col. 2, lines 35-38). The recent Office Action correctly

acknowledges that Johnson does not teach or suggest the claimed steps of "measuring a signal energy;" "measuring a signal carrier to noise plus interference ration (CIR);" "comparing said CIR measurement to a designated CIR threshold value;" and "signaling a valid burst detection if said signal exceeds said designated signal energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time." (Action, p. 7; *See also* claim 11).

Rostany teaches radio channel squelching systems wherein energy received and filtered by a radio unit is "measured by an energy measurement device" that subsequently "provides a signal to a squelch/mute determination device 108" which "compares the energy measurement signal with a predetermined threshold" to determine whether a signal should be muted. (Rostany, col. 4, lines 5-18).

Rostany does not teach or suggest the subject matter of claim 11. Specifically, Rostany does not teach the steps of "measuring a signal carrier to noise plus interference ratio (CIR);" "comparing said CIR measurement to a designated CIR threshold value" or determining "if said signal energy exceeds said designated signal energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time." (claim 11). The Examiner's statement that Rostany uses a "two threshold function" is completely irrelevant to the subject matter of claim 11, as Rostany teaches that the same signal is applied to both thresholds, without any mention of a CIR measurement or a CIR threshold value. (Rostany, col. 6, lines 26-45). Any assertion that Rostany's teaching of comparing a single signal energy measurement to "squelch threshold" and a "mute threshold" suggests making separate signal energy and CIR measurements and comparisons to respective signal energy and CIR thresholds is entirely without logical merit or basis.

Moreover, Rostany completely fails to teach or suggest a "first predetermined period of time" in which the signal energy is measured against the "signal energy threshold" and "a second predetermined period of time" in which the CIR measurement is compared to the designated "CIR threshold." (claim 11). This important teaching of claim 11 cannot be ignored in assessing its patentability.

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Johnson and Rostany, did not include the claimed subject matter, particularly a method including the steps of "measuring a signal carrier to noise plus interference ratio (CIR);" "comparing said CIR measurement to a designated CIR threshold value;" and "signaling a valid burst detection if said signal energy exceeds said designated signal energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time." (claim 11).

The differences between the cited prior art and the claimed subject matter are significant because the claimed hybrid synchronization technique "combines the best performance characteristics of both a lower order demodulation … and a higher order demodulation…to simultaneously achieve both excellent falsing and miss rate performance." (Applicant's original specification, paragraph 0015). Thus, the claimed subject matter provides feature and advantages not known or available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 11 under 35 U.S.C. § 103 and *Graham*. For at least these reasons, the rejection based on Johnson and Gibson of claim 11 and its corresponding dependent claims should be reconsidered and withdrawn.

Claim 22 recites:

> A digital communications system comprising:
> a tuner; and
> a demodulator; wherein said demodulator is configured to receive a signal and perform a multi-step burst detection process on said received signal wherein the multi-step burst detection process further comprises:
> measuring a signal energy;
> comparing said signal energy to a programmable signal energy threshold value;
> *measuring a signal carrier to noise plus interference ratio (CIR);*
> *comparing said CIR measurement to a programmable CIR threshold value; and*
> *signaling a valid burst detection if said signal energy exceeds said designated signal energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time.*

(Emphasis added).

In contrast, the combination of Johnson and Rostany fails to teach the subject matter of claim 22. Specifically, as has been amply demonstrated above, neither Johnson nor Rostany teaches or suggests a demodulator "configured to perform a multi-step burst detection process" that includes the steps of "measuring a signal carrier to noise plus interference ratio (CIR);" "comparing said CIR measurement to a programmable CIR threshold value;" and "signaling a valid burst detection if said signal exceeds said designated energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time." (claim 22).

Under the analysis required by *Graham v. John Deere*, 383 U.S. 1 (1966) to support a rejection under § 103, the scope and content of the prior art must first be determined, followed by an assessment of the differences between the prior art and the claim at issue in view of the ordinary skill in the art. In the present case, the scope and content of the prior art, as evidenced by Johnson and Rostany, did not include the claimed subject matter, particularly

a demodulator configured to perform the steps of "measuring a signal carrier to noise plus interference ratio (CIR);" "comparing said CIR measurement to a designated CIR threshold value;" and "signaling a valid burst detection if said signal energy exceeds said designated signal energy threshold value for a first predetermined period of time and said CIR exceeds said designated CIR threshold value for a second predetermined period of time." (claim 22).

The differences between the cited prior art and the claimed subject matter are significant because the claimed hybrid synchronization technique "combines the best performance characteristics of both a lower order demodulation … and a higher order demodulation…to simultaneously achieve both excellent falsing and miss rate performance." (Applicant's original specification, paragraph 0015). Thus, the claimed subject matter provides feature and advantages not known or available in the cited prior art. Consequently, the cited prior art will not support a rejection of claim 22 under 35 U.S.C. § 103 and *Graham*. For at least these reasons, the rejection based on Johnson and Gibson of claim 22 and its corresponding dependent claims should be reconsidered and withdrawn.

Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as obvious in light of the combined teachings of Johson, Gibson, and Rostany. This rejection is respectfully traversed for at least the reasons given above in favor of the patentability of independent claim 1, from which claims 9 and 10 depend.

Additionally, various dependent claims of the application recite subject matter that is further patentable over the cited prior art. Specific, non-exclusive examples follow.

Claim 14 recites "wherein said designated CIR threshold value comprises a first CIR threshold that is utilized to detect a presence of said signal if said signal is currently undetected, and a second CIR threshold that is utilized to detect the absence of said signal if

said signal is currently detected." Neither Johnson nor Rostany teaches or suggests this subject matter. For at least this additional reasons, the rejection of claim 14 should be reconsidered and withdrawn.

Conclusion:

In view of the foregoing arguments, all claims are believed to be in condition for allowance over the prior art of record. Therefore, this response is believed to be a complete response to the Office Action. However, Applicant reserves the right to set forth further arguments in future papers supporting the patentability of any of the claims, including the separate patentability of the dependent claims not explicitly addressed herein. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

The absence of a reply to a specific rejection, issue or comment in the Office Action does not signify agreement with or concession of that rejection, issue or comment. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment. Further, for any instances in which the Examiner took Official Notice in the Office Action, Applicants expressly do not acquiesce to the taking of Official Notice, and respectfully request that the Examiner provide an affidavit to support the Official Notice taken in the next Office Action, as required by 37 CFR 1.104(d)(2) and MPEP § 2144.03.

If the Examiner has any comments or suggestions which could place this application in better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

DATE: September 12, 2008

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